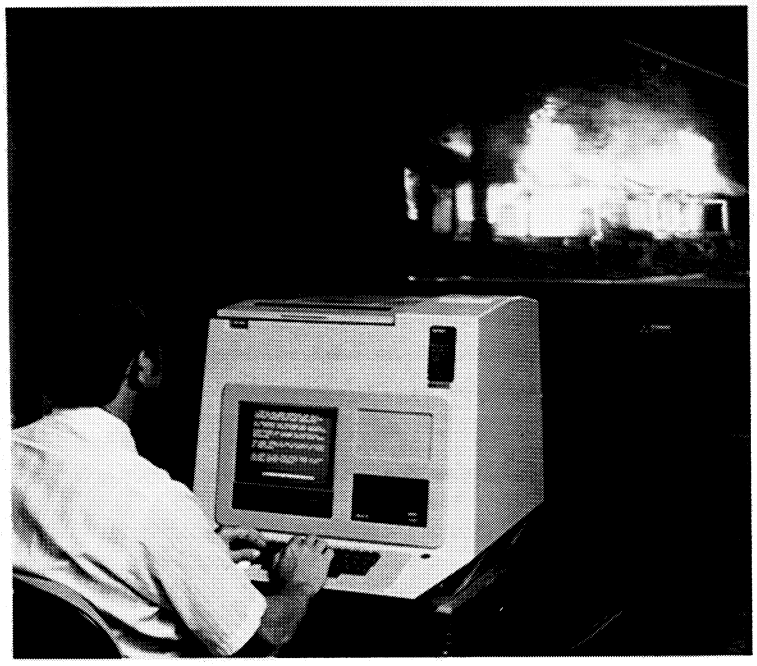

Firefighting Trainer

In the photo, a firefighting trainee is conducting a fire control exercise using a prototype simulator known as the Emergency Management Computer Aided Training System (EMCAT). Developed by Marshall Space Flight Center (MSFC) in response to a request from the Huntsville (Alabama) Fire Department, EMCAT enables a trainee to assume the role of fireground commander and make quick decisions on best use of his firefighting personnel and equipment.

Watching the fire's progress on the TV screen, the trainee is presented a sequence of decisions on the computer monitor; his response, tapped out on the keyboard, causes the video fire to change for better or worse. If he makes a series of correct decisions, the fire is extinguished; if he errs, he will see the fire go out of control. At the end of the exercise, he is critiqued by an instructor and informed which decisions were right or where he went wrong.

The prototype was shown to firefighting authorities from all over the country in demonstrations at MSFC, in Memphis, Tennessee and in Fresno, California. The highly favorable response as to the system's concept and potential led to initiation last year of a development program for an advanced EMCAT, a training aid for the firefighting and other emergency management communities. The program is a joint undertaking of NASA and the National Fire Academy, Federal Emergency Management Agency; MSFC is project manager. A contract for development of the advanced system was awarded to Essex Corporation, Huntsville.

In the prototype, the visual portion of the system was created by video taping—with the cooperation of the Huntsville Fire Department—an actual controlled burn of two condemned buildings. The fire was started and stopped repeatedly to allow taping at various stages of involvement. The tape, transferred to a computer compatible video disc, enabled programmers to choose from a variety of visual outcomes that would result from the trainee's decisions.

The prototype, however, has only one scenario. A survey showed that potential users would want a variety of fire and other emergency scenarios, each involving somewhat different tactics and management techniques. Since it is impossible to tape actual burnings of such structures as high rise apartments, factories or airport facilities, the development team is using video graphic and animation techniques. Tests indicate that realistic visual scenarios can be created by overlaying pictures of static structures with dynamic flame and smoke imagery.

Essex Corporation is now in the design phase of the advanced EMCAT program and the company is working on an initial set of six scenarios simulating a railroad accident and residential, garden apartment, hotel, shopping mall and chemical plant fires. The first simulator and at least one new scenario will be ready for test next year.